

COASTAL CONNECTIONS



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A BIMONTHLY PUBLICATION FOCUSED ON TOOLS FOR COASTAL RESOURCE MANAGERS

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C O A S T A L M A N A G E M E N T P R O F I L E



Tom Shyka
Chief Operating Officer
Gulf of Maine Ocean
Observing System (GoMOOS)

Where you live: Cape Elizabeth, Maine.

Family: Wife Laney, 17-month-old son Simon, and black labs Jack and Baxter.

Education: B.A. in environmental science, Colby College; M.S. in marine ecology, University of Maryland.

Most fulfilling aspect of your job: The positive feedback I get from GoMOOS' end-users.

Most challenging aspect of your job: Our biggest challenge is prioritizing in the face of overwhelming opportunity. It's a great challenge to have but occasionally frustrating when you have to pass up opportunities.

One work-related accomplishment that makes you proud: Three years ago, I partnered with Amy Holt Cline at the University of New Hampshire Coastal Observing Center to start a summer program for elementary and high school

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FOCUS

THE INTEGRATED OCEAN OBSERVING SYSTEM

Three stories illustrate the capacity of this nationwide "system of systems" to address many coastal-management issues.

The Integrated Ocean Observing System (IOOS) makes possible a wide array of data and products used to address natural hazards, maritime safety, national and homeland security, public health, climate change, and use of coastal and ocean resources.

However, this network of buoys, sensors, satellites, and meteorological stations linked to data management and modeling systems is so vast that its capacity to tackle unique coastal concerns can be difficult to grasp.

To render the abstract more concrete, we offer three IOOS case studies—in South Carolina, California, and Alaska—that show how organizations and their partners use IOOS data and applications in distinctive ways to address coastal management concerns.

Aiding Emergency Management in South Carolina

In 2003, Jon Boettcher, manager of natural hazards plans with the South Carolina Emergency Management Division, met with representatives of the Carolina Coastal Ocean Observing and Prediction System (Caro-COOPS) to discuss its potential value to his division.

"In emergency management, we have lots of available information on hurricanes and other storm events when far from shore. But there is less data on how coastal and nearshore areas are affected as storms approach the coast. With Caro-COOPS, we saw great potential to fill that nearshore, near-term void," says Boettcher. "We wanted to know whether Caro-COOPS could help us predict, one or two days before landfall, where a storm surge might occur, what the water levels might be, and where coastal inundation might happen."

The division had an opportunity to use Caro-COOPS data in 2004 when Hurricane Charley, which primarily hit the Gulf of Mexico region, smacked South Carolina's shores as a Category One. "Caro-COOPS sensor arrays helped forecast the probability of storm surge in particular areas of our coast and helped us gauge the potential depth of inundation," says Boettcher.

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teachers. We helped them design lesson plans using ocean observing data. The program has grown to be nationally recognized.

One personal accomplishment that makes you proud: Prior to moving back to Maine, I lived in the Netherlands.

Things you do in your leisure time: In the last year, a lot of my time has been spent on the floor with Simon or following him around—I like to think about things from his perspective.

Before GoMOOS, Tom Shyka worked for an environmental consulting firm, marine labs in the U.S. Virgin Islands and California, Maryland Sea Grant, and the National Marine Sanctuary Program. His wide-ranging experience and technical know-how help him relate to GoMOOS' broad constituency.

"GoMOOS is diverse—in terms of our customers and partners and also geographically," says Shyka. [The Gulf of Maine links the coasts of Massachusetts, New Hampshire, and Maine with the Canadian coastal provinces of Nova Scotia and New Brunswick]. "We strive to work both within and beyond our region, so things that are effective locally are transferable nationally."

To that end, GoMOOS is helping to develop the Integrated Ocean Observing System (IOOS) regional association (RA) for the Northeast. "I am helping to coordinate the RA advisory committee," says Shyka. "We want to synthesize information about user needs so we can develop the most effective products."

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"In the future, we'd also like to know what waves can do as they interact with storm surge. We suspect that the stronger and higher the waves, the further inland the water will travel during storm surge. We would really like to see Caro-COOPS become involved in this area, if funding and opportunity permits," adds Boettcher.

Monitoring the California Coast

Mas Dojiri is a wastewater treatment laboratory manager for the City of Los Angeles' Environmental Monitoring Division (EMD) in California. In November 2006, the EMD partnered with several organizations to monitor the course—and environmental effects—of treated sewage effluent as it was diverted from its customary route to a different pipeline emptying one mile off the coast of Santa Monica Bay.

The Hyperion sewage treatment plant in Los Angeles has two discharge pipes for treated effluent. One pipe, used rarely, discharges a mile offshore. The other pipe, used regularly, discharges five miles offshore.

"Our five-mile pipe is 46 years old, so we wanted to examine its structural integrity," says Dojiri. That task required effluent to be redirected to the one-mile pipe so that divers could enter the five-mile pipe and inspect it safely. A remotely operated camera wouldn't do the job. "Divers have to use their fingers to check the pipe joints for possible corrosion," says Dojiri.

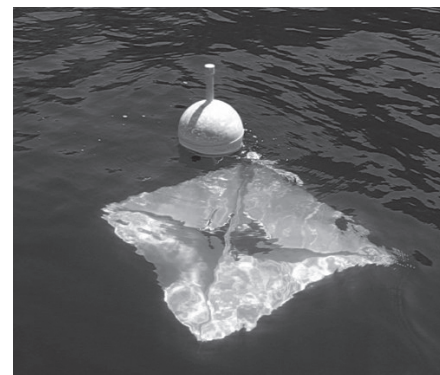
Personnel with the Southern California Coastal Water Research Project (SCCWRP) expressed interest in monitoring the three-day discharge event, and they were quickly joined by other partners—the Southern California Coastal

Ocean Observing System (SCCOOS), NASA's Jet Propulsion Laboratory, Scripps Institution of Oceanography, University of Southern California, and University of California, Los Angeles.

"Everybody brought something different and valuable to the table," says Dojiri. Working together, the partners used a multitude of ocean observation tools: aerial photos; synthetic aperture radar that provided photographs of the effluent plume as viewed from space; near-real-time discharge velocity data through the use of high-frequency radar; and boat-based "drifters" in the water that logged the current's real-time direction and speed before, during, and after the diversion event.

All available data were quickly posted on the SCCOOS Web site, making it accessible to organizations, agencies, and the public. In addition, scientists inside and outside EMD monitored environmental effects through water sampling for temperature, salinity, bacteria, nitrogen, phosphorus, phytoplankton, and other parameters.

The rewards from this collaboration have been many. First, divers examining the five-mile pipe discovered that it was in remarkably



This basketball-shaped sphere—termed a "drifter"—is equipped with a Global Positioning System unit and an underwater kite. When the kite is pulled by ocean currents, data on the speed and direction of the current are transmitted to a land-based receiver. (To learn more, see "Focus.")

Courtesy Pacific Gyre, Inc.



good condition. Second, high-frequency radar data and particle modeling correctly predicted that the treated effluent would flow in an offshore direction. Finally, data during and after the discharge event showed that any bacterial problems along the beaches were not caused by the effluent.

"The involvement of these scientific organizations offered a huge boost in our monitoring program—not only in scientific value, but also in public relations and outreach. The organizations involved had great credibility and integrity, and the transparency of the event allowed anyone who was interested to keep informed while it was happening," says Dojiri.

Addressing Stakeholder Concerns in Alaska

A hiker walking 1,000 miles per year along Alaska's coastline would take 44 years to complete the journey. That fact is no surprise to Molly McCammon, executive director of the Alaska Ocean Observing System (AOOS).

"One of our challenges with AOOS is that we're a small state in terms of population but a huge state in terms of our coastline," notes McCammon. Starting with AOOS' genesis in 2003, McCammon sponsored or attended over 150 meetings, listening to Alaska's varied coastal stakeholders.

"It was clear from those meetings that we needed a central data portal for ocean and marine information. Initially, that has been our top focus," says McCammon.

"Coastal communities want to know the conditions of ice outside their back door, whether they're hunting whales, going out on a boat or snow machine, or concerned about storms or ice conditions affecting their roads and shoreline," she adds.

Now AOOS' Web site allows stakeholders to view weekly

animations of Arctic sea-ice concentration, and people in the town of Barrow can access real-time ice data from their televisions. Other Web information includes current sea-surface temperatures and wave activity in Alaskan waters, as well as Web cams of current weather conditions. Additional geographic information system and video imagery products will soon be available as well.

Collaborating within, and across, Regions

In addition to her duties in Alaska, McCammon also serves as chair of the National Federation of Regional Associations (NFRA), an organization that assists regional

associations in linking their efforts and expanding IOOS outreach.

According to McCammon, the importance of regional associations and the federation cannot be overestimated. "Regional associations connect stakeholders across various agencies and issues," says McCammon. "They also link coastal localities, municipalities, counties, and multiple states, and sometimes even cross national borders, as in the case of Canada and Mexico. The NFRA is important because it offers a way for those of us in different regions to discuss issues and speak with a single, unified voice." (To learn more about regional associations and the NFRA, see "IOOS Resources.")

IOOS RESOURCES

Interested in getting the most out of IOOS data and applications? The following organizations and initiatives can help:

- **Regional Associations (RAs)** – As part of the national plan for IOOS, 11 RAs were established to coordinate and support IOOS efforts within their regions. With funding from NOAA, and administrative and technical support from the NOAA Coastal Services Center, these associations help stakeholders assess their coastal and ocean observation needs and identify the most useful data and applications. Association members also benefit by networking with other members and sharing IOOS success stories and lessons learned. To locate the RA in your area, visit www.csc.noaa.gov/ras/.
- **National Federation of Regional Associations (NFRA)** – This organization promotes the development of regional associations nationwide and helps coordinate their activities. The federation also oversees consistency within the associations, leads communication among regions, and assists in the design and planning of IOOS within and across regions. The Center coordinates with the NFRA on specific tasks. For more information, visit www.usnfra.org.
- **Coastal Observation Technology System (COTS)** – Since 2002, NOAA has been building the capacity of regional observing systems through funding of COTS projects. These congressionally directed projects, administered through the Center, address a range of IOOS topics and play a major role in developing standards and protocols for data management and sharing. To learn more, visit www.csc.noaa.gov/cots/.

To find out more about the Center's role in these initiatives, contact Mary.Culver@noaa.gov.





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Coastal Connections
NOAA Coastal Services Center
2234 South Hobson Avenue
Charleston, South Carolina 29405
(843) 740-1200
CoastalConnections@noaa.gov
www.csc.noaa.gov/newsletter/

Editor:

Kitty Fahey

Communications Director:

Donna McCaskill

Current Events Editor:

Hanna Goss

Copy Editor:

Gerald Esch

Graphic Designer:

Frank Ruopoli

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NEWS AND NOTES

Coastal Zone Conference in Oregon

Nearly 1,000 coastal resource management professionals are expected to attend Coastal Zone 07 in Portland, Oregon, July 22 to 26. This year's theme, "Brewing Local Solutions to Your Coastal Issues," will incorporate a wide variety of related sessions, workshops, and field trips. For more information, visit www.csc.noaa.gov/cz/.

Maryland Premieres On-line Coastal Mapping Tool

The Maryland Coastal Program, in cooperation with Towson University Center for Geographic Information Sciences and Maryland Geological Survey, has released Maryland Shorelines Online. This interactive Web portal features a geographic information system mapping tool that aids users in assessing and managing coastal hazards, shoreline change, and coastal flooding. Visit the portal at <http://shorelines.dnr.state.md.us>.

Fourth Annual Ocean Power Conference and Exhibition in Hawaii

The Turtle Bay Resort in Oahu, Hawaii, will be the site of the Ocean Energy Council's annual EnergyOcean conference and exhibition, August 21 to 23, 2007. Policy makers and technologists from around the world are expected to attend this event, which will address power generation technologies such as wave, thermal, solar, hybrid, tidal-current, and offshore-wind power. Additional conference details are available at www.energyocean.com/about.php.

Transitions

Max Mayfield, capping 34 years of dedicated service, has retired as director of NOAA's National Hurricane Center, and **Bill Proenza**, former director of the National Weather Service Southern Region, has succeeded him... **Bruce Carlisle**, previously manager of the Wetlands Restoration Program for the Massachusetts Office of Coastal Zone Management (CZM), has been named acting director of this CZM... **Mike Shirley**, former research coordinator at Rookery Bay National Estuarine Research Reserve in Naples, Florida, has been appointed manager of the Guana Tolomato Matanzas Reserve... **Donna S. Wieting**, former deputy director of the National Marine Fisheries Service Office of Protected Resources, has been named deputy director of the Office of Ocean and Coastal Resource Management.

NOAA Coastal Services Center
2234 South Hobson Avenue
Charleston, South Carolina 29405

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